

ABSTRACT OF THE DISCLOSURE

A method and apparatus for simultaneously transmitting, at a common frequency, a plurality of signals on a plurality of beams from a phased array antenna involves forming composite signals that contain the plurality of signals. The composite signals correspond to
5 respective antenna elements in the antenna array and include at least a first signal for transmission via a first transmit beam and a second signal for transmission via a second transmit beam. The phases of the composite signals are a function of signal modulations of the first and second signals and phases of the respective antenna elements required to form the first and second transmit beams. By digitally forming the composite signals, taking into
10 account the modulation phase and beam-forming phase of each signal at each antenna element, hardware requirements are reduced and efficient, saturated amplifier can be employed.